

REMARKS

Applicant thanks the Examiner for withdrawing the rejections of record in the December 19, 2003 Office Action.

Status of the Application

Claims 1-21 and 27-41 are all the claims pending in the Application, as claims 37-41 are hereby added.¹ Claims 8-10, 13-17, 20, 21 and 27-36 have been rejected.

Applicant notes that dependent claims 27, 29, 31, 33 and 35 are dependent from allowed claim 1, and therefore should be indicated as “allowed,” not “rejected.” Applicant has previously notified the Examiner of this dependency.²

Applicant thanks the Examiner for indicating that claims 1-7 are allowed.

Applicant thanks the Examiner for indicating that claims 18 and 19 would be allowed if rewritten in independent form. **Applicant notes that claims 18 and 19 are already in independent form, and therefore should be indicated as “allowed,” not “objected to.”** Applicant has previously notified the Examiner that these claims are in independent form.³

Applicant thanks the Examiner for indicating that claims 11 and 12 would be allowed if rewritten in independent form. Applicant respectfully requests that the Examiner hold in abeyance such rewriting until the Examiner has had an opportunity to reconsider (and withdraw) the prior art rejection of the other claims.

¹ Claims 37-41 are fully supported, at least by the Figures of the instant Application, and are respectfully submitted to be allowable at least by virtue of their dependency.

² See page 2 of the March 19, 2004 Response.

³ See page 2 of the March 19, 2004 Response.

Claim Rejections

The Examiner has rejected claims 8, 9, 10, 13, 14, 15, 16, 17, 20 and 21 under 35 U.S.C. § 102(b) as being anticipated by *Gamst* (US 4,134,547; hereinafter “*Gamst*”), and claims 27-36 under 35 U.S.C. § 103(a) as being unpatentable over *Gamst*. These rejections are respectfully traversed.

As discussed at length in each of Applicant’s previous responses, *Gamst* discloses (see FIG. 1) a high-pressure jet pipe for cleaning “workshop premises and other large rooms” (col. 1, lines 16-17), which is composed of inlet pipe 1 and outlet pipe 2. Outlet pipe 2 has a varying shape in cross section, as shown by conically converging portion T, straight portion X, and conically diverging portion Y. The diameters of converging portion T and diverging portion Y vary linearly in cross section, as clearly shown in FIG. 1. Compressed air is pumped into annular chamber 6 and exits through slit opening 7 to mix with water pumped through venturi nozzle 8, and the mixture then passes through converging portion T, straight portion X, and diverging portion Y of outlet pipe 2, and is further accelerated. Inlet pipe 1, outlet pipe 2, annular chamber 6, slit opening 7 and venturi nozzle 8 are all arranged linearly (and coaxially) along *Gamst*’s jet pipe.

The Examiner has taken the position that *Gamst* discloses all of the features recited in independent claims 8 and 15. Specifically, the Examiner has alleged that Figure 1 shows all of the claimed features, and that:

Gamst does not specifically disclose the gas being ejected from the gas ejection port at a speed higher than that of the cleaning liquid, however, since the surface area of the gas ejection port is smaller than that of the cleaning liquid ejection port, the gas will be ejected from the gas ejection port at a speed higher than that of the cleaning liquid from the cleaning liquid ejection port (see Figure 1).

Applicant disagrees with the Examiner's reasoning. **The simple fact that there is a relative size difference between the slit openings 7 and the Venturi nozzle 8 does not mean that the compressed air pumped through slit openings 7 MUST be ejected at a speed higher than that of the water pumped through Venturi nozzle 8.**

Rather, the relative ejection speeds of the air and water in *Gamst* is controlled by many factors in addition to the outlet sizes. These factors include, *inter alia*, the relative differences in pressure at which the air and water are respectively introduced, the shapes of the cavities in which the air and water are introduced, and the respective flow properties of the air and water.

The Examiner has not addressed any of these other factors. Thus, Applicant respectfully submits that the rejection of claims 8 and 15 is unsupported, and should be withdrawn.

Additionally, Applicant respectfully submits that *Gamst* fails to teach or suggest *at least* a cleaning nozzle where: (1) "a gas is ejected from said gas injection port at a speed higher than that of a cleaning liquid from said cleaning liquid ejection port to transform the cleaning liquid into droplets and to accelerate them" as recited in independent claim 8; or (2) "a gas is ejected at a higher speed than that of a cleaning liquid to transform the cleaning liquid into droplets" as recited in independent claim 15.

In contrast, *Gamst* discloses a slit opening for air coming from the inlet 3 that is located outside and directly opened to the venturi nozzle 8 for water so that the air stream is poured into the water stream. Accordingly, in *Gamst*, air bubbles are formed in the water stream by this arrangement. **Forming air bubbles in the water stream is not the same as the claimed transformation of cleaning liquid into droplets.**

Thus, again, Applicant respectfully submits that the rejection of claims 8 and 15 is unsupported, and should be withdrawn.

Further, Applicant respectfully submits that *Gamst* fails to teach or suggest *at least* “an ejection nozzle portion having a minimum diameter portion and a trumpet-shaped portion formed by a curved surface located upstream of said minimum diameter portion, an inclination angle of a tangent to the curved surface progressively decreasing toward said minimum diameter portion,” as recited in claim 8.

Specifically, Applicant again submits that *Gamst* **only discloses linearly varying surfaces in any portion that could be considered a trumpet shaped portion** (such as conically converging portion T) of the “jet pipe” shown in FIG. 1. Linear variation does not approximate the claimed “curved surface.”

Thus, Applicant respectfully submits that independent claim 8 is patentable over *Gamst*.

Still further, Applicant respectfully submits that *Gamst* fails to teach or suggest *at least* “a converging-diverging nozzle portion having a minimum diameter portion and a trumpet-shaped portion formed upstream of said minimum diameter portion,” as recited in claim 15.

Specifically, Applicant again submits that the nozzle of *Gamst* has a conically converging section T and a conically diverging section Y separated by a constant diameter section X. **This separation of the respective converging and diverging portions results in a nozzle that is not “converging-diverging.”** For an illustrative, non-limiting *example* of a “converging-diverging nozzle,” see FIG. 13 of the Application.

Thus, Applicant respectfully submits that independent claim 15 is patentable over the applied references.

Lastly, Applicant respectfully submits that rejected dependent claims 9, 10, 13, 14, 16, 17, 20, 21, 28, 30, 32, 34 and 36 are allowable, *at least* by virtue of their dependency.

Conclusion

In view of the foregoing, it is respectfully submitted that claims 1-21 and 27-41 are allowable. Thus, it is respectfully submitted that the application now is in condition for allowance with all of the claims 1-21 and 27-41.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Please charge any fees which may be required to maintain the pendency of this application, except for the Issue Fee, to our Deposit Account No. 19-4880.

Respectfully submitted,



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